

## Amendments To Claims

Claims 1-10. (Cancelled).

11. (Currently Amended) A method for adapting a Bayesian network, comprising:

generating a set of parameters for the Bayesian network in response to a set of past observation data such that the Bayesian network models an environment;

obtaining a set of present observation data from the environment;

adapting a learning rate for the parameters such that the learning rate responds to changes in the environment indicated by the present observation data;

updating the parameters in response to the present observation data ~~using a~~ using the learning rate ~~that is selected to respond to changes in the environment.~~

12. (Currently Amended) The method of claim 11, wherein ~~updating~~ adapting comprises ~~updating~~ adapting the parameters using a different learning rate for each parameter of the Bayesian network.

13. (Currently Amended) The method of claim 11, ~~further comprising determining the learning rate by~~ wherein adapting comprises determining an initial value for the learning rate and determining an estimate of the parameters in response to the present observation data and increasing the learning rate if an error between the estimate and a mean value of the parameters is relatively large.

14. (Currently Amended) The method of claim 11, ~~further comprising determining the learning rate by~~ wherein adapting comprises determining an initial value for the learning rate and determining an estimate of the parameters in response to the present observation data and decreasing the learning rate when convergence is reached between the estimate and a mean value of the parameters.

15. (Previously Presented) The method of claim 11, wherein a subset of values in the present observation data is unavailable when updating.

16. (Previously Presented) The method of claim 11, wherein the environment is an online environment.

17. (Previously Presented) The method of claim 16, wherein the online environment is an email system.

18. (Previously Presented) The method of claim 16, wherein the online environment is an e-commerce system.

19. (Previously Presented) The method of claim 16, wherein the online environment is a database system.

20. (Previously Presented) The method of claim 11, wherein updating comprises determining an initial set of the parameters and then updating the parameters in response to the present observation data using the learning rate.

21. (Currently Amended) A system, comprising:

~~on-line~~ environment that generates a set of present observation data;

Bayesian network that performs automated reasoning for the ~~on-line~~ environment in response to the present observation data;

~~on-line~~ adapter that obtains the present observation data from the on-line environment and that ~~adapts~~ determines a set of parameters for the Bayesian network in response to the present observation data ~~according to~~ by adapting a learning rate for the parameters ~~that is selected~~ to respond to changes in the ~~on-line~~ environment.

22. (Currently Amended) The system of claim 21, wherein the ~~on-line~~ adapter ~~adapts the parameters using~~ uses a different learning rate for each parameter of the Bayesian network.

23. (Currently Amended) The system of claim 21, wherein the ~~on-line~~ adapter ~~adapts~~ determines the parameters by determining an initial set of the parameters and then updating the parameters in response to the present observation data using the learning rate.

24. (Currently Amended) The system of claim 21, wherein the ~~on-line~~ adapter ~~determines~~ adapts the learning rate by determining an initial value for the learning rate and determining an estimate of the parameters in response to the present observation data and increasing the learning rate if an error between the estimate and a mean value of the parameters is relatively large.

25. (Currently Amended) The system of claim 21, wherein the ~~on-line~~ adapter ~~determines~~ adapts the learning rate by determining an initial value for the learning rate and determining an estimate of the parameters in response to the present observation data and decreasing the learning rate when convergence is reached between the estimate and a mean value of the parameters.

26. (Previously Presented) The system of claim 21, wherein a subset of values in the present observation data is unavailable.

27. (Currently Amended) The system of claim 21, wherein the ~~online~~ environment is an email system.

28. (Currently Amended) The system of claim 21, wherein the ~~online~~ environment is an e-commerce system.

29. (Currently Amended) The system of claim 21, wherein the ~~online~~ environment is a database system.